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USER GUIDANCE SYSTEM IN A PAY POINT NETWORK

5 The present invention relates to a user guidance system in a pay point network and in particular a network of parking pay points. The present invention relates more particularly to a guidance system intended to enable a user to find a pay point easily.

10 Thanks to a system of the above kind, a motorist who has parked his vehicle in a parking space for which a parking fee is payable is able to find his vehicle if he forgets where it is parked or wishes to return to his vehicle by the shortest route.

15 The present invention also relates to the means employed by said system of the invention. In this regard, the present invention relates more particularly to the pay points used and in particular to on-street vehicle parking pay points.

20 For many years, parking motor vehicles in towns has been subject to the payment of a parking fee. To leave his vehicle in a parking space, a motorist must prepay an amount corresponding to the chosen parking time.

25 To occupy a parking space for which a parking fee is payable, the user must therefore pay a parking fee at an appropriate pay point. Pay points of this kind are better known as parking meters or parking ticket dispensers.

30 The parking meter system consists in a machine in which motorists wishing to park must pay an amount corresponding to the required parking time by means of coins, cards, etc. A display mechanism on the machine then displays a pointer corresponding to the parking time that has been paid for. This pointer then moves backwards as time passes. It is simple to monitor a system of this kind since it is sufficient for parking wardens to note the position of the pointer to tell if the vehicle occupying  
35 the space controlled by the machine in question is legally parked or not.

In the case of parking ticket dispensers, in return

for payment for the required parking time by means of coins, appropriate payment cards, mobile telephones, etc., the user receives a ticket carrying printed information and in particular the time until which parking is authorized.

5 The user must place this ticket visibly behind the windshield of his vehicle. Parking wardens then check that parked cars are displaying a ticket and note the parking expiry time indicated on the ticket.

10 Whichever type of pay point is used (parking meter or parking ticket dispenser), the user's vehicle is always in the immediate vicinity of, meaning less than a hundred meters away from, the machine used to pay the parking fee.

Finally, sooner or later, the user must return to his vehicle or pay a new amount before the parking time

15 already paid for expires if his vehicle is not to be illegally parked and attract a fine.

The user therefore has to remember where he parked his vehicle. Because of the increasing size of modern towns, it happens increasingly often that a user is unable

20 to remember very clearly where he left his vehicle.

This phenomenon is even more accentuated when the user is in a town other than his home town, or even abroad, and is therefore unfamiliar with the local topography.

The present invention therefore proposes to assist

25 a user who has used a pay point to pay a parking fee to find his vehicle. The invention assists the user to find where his vehicle is parked.

According to the invention, the system for guiding a user in a network of pay points delivering goods or services, such as parking ticket dispensers for paying

30 parking fees, is characterized in that some or all of the machines on the network comprise first means for supplying to the user information on the location of said machines.

According to another feature of the guidance system

35 of the invention, said means of the machines of the network for supplying the user with location information cooperate with payment means of said machines so that said location

information is not supplied to the user until a payment for goods or services has been effected at said machines.

According to another feature of the guidance system of the invention, the information on the location of the machines of the network consists in a unique identification code for each machine.

According to another feature of the guidance system of the invention, the information on the location of a machine is printed on a ticket issued by printing means of said machine.

According to another feature of the guidance system of the invention, some or all of the machines adapted to supply to the user information on the location of the machines include appropriate writing means for transferring said information on the location of said machines into the appropriate memories of a contact or contacts type microprocessor card of the user, such as a payment card.

According to another feature of the guidance system of the invention, some or all of the machines adapted to supply to the user information on the location of the machines include appropriate radio-frequency transmission means for transferring said information on the location of said machines by radio into the memories of a suitable terminal of the user, such as a mobile telephone, for example in the form of a voice telephone call, or in the form of a text message such as an SMS text message or an e-mail.

According to another feature of the guidance system of the invention, some or all of the machines of the network include second means for supplying guidance information enabling the user to go from said machine to any other machine of said network, said second means including acquisition means for acquiring information on the location of said other machine supplied by the user.

According to another feature of the guidance system of the invention, the means of a first machine of the network for providing guidance information for going from

said first machine to a second machine of said network cooperate with payment means of said machine so that said guidance information is supplied to the user only after a payment for a service of this kind has been effected at  
5 said first machine.

According to another feature of the guidance system of the invention, the acquisition means include a man-machine interface, such as a keypad, on which said user may enter information on the location of a machine to which he  
10 wishes to go.

According to another feature of the guidance system of the invention, the acquisition means include a microprocessor card reader for recovering said information on the location of a machine in the appropriate memories of  
15 a contact or contactless type microprocessor card of the user, such as a payment card.

According to another feature of the guidance system of the invention, the acquisition means include appropriate radio-frequency receiving means for downloading by radio  
20 said information on the location of a machine from a suitable communication terminal of the user, such as a mobile telephone, for example in the form of an SMS message.

According to another feature of the guidance system of the invention, the guidance information for going to a machine of the network is printed on a ticket issued by printing means of said machine supplying the guidance  
25 information.

According to another feature of the guidance system of the invention, the guidance information for going to a machine of the network is displayed on an appropriate screen of said machine supplying the guidance information.  
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According to another feature of the guidance system of the invention, the guidance information for going to a machine of the network is communicated by voice synthesis  
35 means of said machine supplying the guidance information.

According to another feature of the guidance system

of the invention, some or all of the machines supplying guidance information include appropriate radio-frequency transmitting means for sending said guidance information for going to a machine of the network to a suitable  
5 terminal of the user, such as a mobile telephone, for example in the form of a voice telephone call, or in the form of a text message such as an SMS text message or an e-mail.

According to another feature of the guidance system  
10 of the invention, the location and/or guidance information comprises the address of said machine.

According to another feature of the guidance system of the invention, the location and/or guidance information comprises a map of the neighborhood of said machine.

15 According to another feature of the guidance system of the invention, the guidance information comprises a description of one or more paths to the machine to which the user wishes to return from the machine supplying the information.

20 According to another feature of the guidance system of the invention, the guidance information comprises a map of one or more paths to the machine to which the user wishes to return from the machine supplying the information.

25 The objects, aspects and advantages of the present invention will become clear from the following description of embodiments of the invention given by way of non-limiting example and with reference to the appended drawing, in which:

30 FIG. 1 is a diagram of a pay point network employing the method of the invention.

FIG. 1, in which only elements needed to understand the invention appear, shows two pay points X and Y which in this instance are parking ticket dispensers. These parking  
35 ticket dispensers X and Y belong to a network of parking ticket dispensers meshing a built-up area and managed by an operator such as a private organization or a municipal

authority. The same network may comprise from several dozen to several thousand parking ticket dispensers according to the size of the town or built-up area concerned. The use of parking ticket dispensers as pay points is obviously not  
5 limiting on the present invention.

In streets in which parking has to be paid for, parking ticket dispensers are disposed along the pavement at regular intervals, for example every fifty meters.

The parking ticket dispensers X and Y comprise  
10 means for implementing the essential functions of a parking ticket dispenser, that is to say payment means, such as a card reader with electronic memory or microcontroller and/or a coin or token handling device, information entry means, such as a keypad or a thumbwheel, associated with a  
15 display screen, in particular for selecting the parking time, printing means, in particular for printing parking tickets to be placed behind the windshield of parked vehicles, a time generator, electrical power supply means, etc. A central unit or microcontroller with appropriate  
20 software controls the operation of the parking ticket dispenser and its various peripherals.

All the means cited above are known in the art and will not be described in more detail.

According to the invention, the microcontrollers of  
25 the parking ticket dispensers X and Y are equipped with a dedicated program for determining information necessary for locating the parking ticket dispensers and supplying that information to the user. Executing this program corresponds to executing the method of the invention.

30 A user who has parked his vehicle in a space where a parking fee is payable goes to the nearest parking ticket dispenser X in order to pay the parking fee. When the step of paying the parking fee has been completed, the parking ticket dispenser X offers the user the possibility of  
35 locating the parking ticket dispenser.

Selection of this location service by the user pressing a button or a key of the keypad provided for this

purpose starts execution of the program cited above.

The location program then determines the information necessary for the location process, for example the number of the building and the name of the street where  
5 the parking ticket dispenser X is situated; this information is simply stored in a non-volatile memory of the parking ticket dispenser X.

When the above information has been determined, the parking ticket dispenser X simply prints it on a specific  
10 ticket for the user separate from the parking ticket that has to be placed behind the windshield of the user's vehicle.

In a different embodiment, the location information is printed after the usual parking ticket information; in  
15 this case the ticket is in two pre-cut parts and the user has only to separate the two parts of the parking ticket, place one in his car and retain on his person the other part, carrying location information.

Of course, depending on the sophistication of the parking ticket dispenser X, the format in which the  
20 location information is delivered may be more elaborate. Thus if the parking ticket dispenser X has a graphical printer, the location information may take the form of a detailed map of the neighborhood, with the exact location  
25 of the parking ticket dispenser X precisely indicated.

The user recovers and retains the ticket carrying the location information. He may then go about his business freely and contentedly, without having to remember where he  
30 has parked. Later, when he wishes to return to his vehicle, it is sufficient for him to consult the location information on the ticket.

A variant of the embodiment of the invention described communicates location information in the form of a code identifying the parking ticket dispenser X. This  
35 unique identifier or serial number, running from 1 to the number of pay points constituting the network of pay points, may be printed instead of or in addition to the

location information previously referred to.

Once the location ticket has been printed, the user recovers and retains it. He may then go about his business freely and contentedly, without having to remember where he  
5 has parked.

Later, when he wishes to return to his vehicle, it is sufficient for the user to go to any parking ticket dispenser Y of the network and select the location function using a button or a key of the keypad provided for this  
10 purpose. This function, which may or may not be conditional upon prepayment, then starts execution of the program referred to above.

The program in question then prompts the user to enter the unique identifier of the parking ticket dispenser X printed on the location ticket, by means of a keypad  
15 provided for this purpose.

When entry of the unique identifier of the parking ticket dispenser X has been completed, the location program uses the unique identifier to determine the shortest path  $T_Y(X)$  from the parking ticket dispenser Y to the location  
20 of the parking ticket dispenser X and therefore of the vehicle.

This path  $T_Y(X)$  may be determined by the location program simply reading in a non-volatile memory of the parking ticket dispenser Y a table supplying the path  $T_Y(X)$  as a function of the unique identifier of the parking  
25 ticket dispenser X.

For example, the table may comprise a simple dictionary giving, for a given machine Y, and as a function  
30 of the identifier of the destination machine X, the shortest path to that machine X, in a specific format that is not part of the invention. For example, the path could consist of a list of streets to be taken to return to the location of the machine X.

When the path  $T_Y(X)$  has been determined, the parking ticket dispenser Y simply prints it on a ticket for  
35 the user. Of course, depending on the sophistication of the



parking ticket dispenser Y, the format in which the path  $T_Y(X)$  is delivered may be more elaborate. Thus if the parking ticket dispenser Y has a graphical printer, the path  $T_Y(X)$  may take the form of a detailed map with the  
5        respective locations of the parking ticket dispensers X and Y precisely indicated.

      If the user wishes to use a smart card to pay his parking fee, another variant of the embodiments of the invention described above consists in using this medium to  
10       locate the vehicle, whether the card in question is a memory card, a microcircuit card, of the contact or contactless type, and used to make the payment or not.

      Accordingly, in this variant of the method of the present invention, offered by way of illustration, the  
15       parking ticket dispenser X stores its unique identifier in the memory or a dedicated file of the user's smart card at a given stage of the process of the user paying his parking fee.

      At the end of the payment step, the user recovers  
20       his smart card. He may then go about his business freely and contentedly, without having to remember where he has parked.

      Later, when he wishes to return to his vehicle, it is sufficient for the user to go to the nearest parking ticket  
25       dispenser Y and select the location function using a button or a key of the keypad provided for this purpose. That function then starts execution of the program previously cited.

      The program in question then prompts the user to  
30       insert his smart card into the card reader provided for this purpose. Once the smart card has been inserted correctly into the reader, the latter reads the unique identifier of the parking ticket dispenser X in the memory of the smart card or in the dedicated file.

35       The unique identifier of the parking ticket dispenser X is then passed to the location program, which uses this information to determine the shortest path  $T_Y(X)$

from the parking ticket dispenser Y to the location of the parking ticket dispenser X and therefore of the vehicle.

5 The path  $T_Y(X)$  may be determined by the location program simply reading in a non-volatile memory of the parking ticket dispenser Y a table providing the path  $T_Y(X)$  as a function of the unique identifier of the parking ticket dispenser X.

10 When the path  $T_Y(X)$  has been determined, the parking ticket dispenser Y simply prints it on a ticket for the user. Of course, depending on the sophistication of the parking ticket dispenser Y, the format in which the path  $T_Y(X)$  is delivered may be more elaborate. Thus if the parking ticket dispenser Y has a graphical printer, the path  $T_Y(X)$  may take the form of a detailed map with the  
15 respective locations of the parking ticket dispensers X and Y precisely indicated.

Of course, the embodiments described in detail above are provided by way only of illustration of various embodiments of the invention, which is not limited to those  
20 embodiments only.

Thus the present invention relates to any pay point network and not only to networks of parking pay points. Accordingly, the present invention may be applied to public telephones, transport ticket dispensers, automatic drinks  
25 dispensers, etc.

Accordingly, the communication of location and/or guidance information, whether from the machine to the user or from the user to the machine, may employ radio frequency transmission (GSM, WI-FI, etc.). In this embodiment the  
30 machines are equipped with radio-frequency transceiver means for transferring location and guidance information by radio between the machines and a suitable terminal of the user, such as a mobile telephone, for example in the form of a voice telephone call, or in the form of a text message  
35 such as an SMS text message or an e-mail.